Emergency Risk Management Arrangement of Building External Wall Painting Works at Sha Kok Estate, Shatin for Yau Lee Construction

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PDPS 278 OS-TRI-1 CHIN OF

ASSIGNMENT 1

Support Issues in Civil Care and Security

submitted to

The University of New England

And

The Chinese University of Hong Kong

for the degree of

Bachelor of Professional Studies
in
Civil Care and Security
PREPARED

2006-07-13

Faculty of Education, Health and Professional Studies, UNE

Preface

Risk is central feature in everyday life. We all take risks all the time, often ways we do not even recognize. In many cases, we do not appreciate the extent of the risks we take. For example, we usually do not think about the risk inherent in driving a car or participating in sports activities.

Risk is often a critical component of choice. One way to think about risk is in term of a relative threat to values.

Despite a long-term risk problem, business, institutions, and organizations generally ignore security need, opting focus on design for business efficiency, operation functions and investment.

Management rarely considers including built-in security, or if it does, eventually decides it is too costly. So, we need to use method to present the risks to management for communication.

There are a lot of risk management method models on internet for risk communication, such as Emergency Preparedness Capacity Builders (EPCB) Self Assessment, Capability Assessment for Readiness (CAR), NFPA 1600 Standard on Business Continuity and Emergency Management (NFPA 1600), Successful health and safety management (HS-G 65) or build your own "method". (John Salter, 2006, CUHK lecture - PDPS 278 Supporting Issues for Civil Care & Security, UNE)

I just like using the following three models: -

The EPCB model suggests 9 concise program elements to design a risk management program, which uses simple assessment questionnaire, takes data and automatically generates the results in graphical and numerical form in subsequent worksheets. Where appropriate, comments have been embedded throughout the questionnaire to provide the assessor with further explanation about the questions should it be required. The comments are denoted by a red flag in the top right hand corner of a cell. Comments can be read by holding the cursor over the cell. (John Salter, 2006, CUHK lecture - PDPS 278 Supporting Issues for Civil Care & Security, UNE)

The NFPA 1600 model suggests 15 detail program elements to design a standard Disasters and Emergencies management program, which fully describes a risk management planning from a community establishment, include describe the context of our community, establish risk assessment criteria, rofile risks vulnerability, analysis risks, evaluate & prioritize risks, develop intervention program, communication and Warning, etc. (http://www.nfpa.org)

The HS (G) 65 also suggests 6 keys simple program elements to design a risk management program, which takes the "Plan-do-check-act", auditing, policy, organizing, planning, measuring and implementing, measuring performance and reviewing performance. (Establish Occupational Safety Management Policy, Occupational Safety& Health Council, 2002, P.4)

Those risks management are inter-linked and are subject to auditing as shown in international risks management system model.

Background

A director of Yau Lee Construction Company Limited, Yip Keung Wong, is my ex-schoolmate's father, has come to me for advice and assistance in preparing an emergency risk management on "Maintenance and Repair Building Works at Sha Kok Estate, Sha Tin".

I have been pondering for quite some time: "Which risk management model should I present to him? Which type of maintenance and repair works does he prefer?" Would he concern about scaffold worker fall from height?" As I have asked him about this matter! "Building external wall painting works, which are facing a lot of potential hazards, are the hottest topic in construction industry. This risk management model has been written for everyone who related and pays attention to risks of painting industry.

Introduction

Hong Kong painting industry is affected by at least 18 types of accident, which increased poverty, raid and uncontrolled urbanization and economic circumstances, every year.

However, the Hong Kong Government and Construction Company do not appreciate the damage level of these occupational injuries in all construction workplaces, such as fall of person from height, falling objects, electric shock, industrial disease, fire, skin burn, noise pollution, etc.

Incidence

A building external wall painting worker (the deceased person) fell a distance of 6 m from a bamboo scaffolding down to the round while spraying paints for the construction of a wall on a building

external wall painting work site. (Case study, Journal (Jan, 2006) of Green Cross, Occupational Safety & Health Council, P.43)

Fall of person from height is the top killer in the construction industry (Table 1 & 2). The statistics shows that the deceased persons fell from bamboo scaffolds, working platforms/false works or unfenced dangerous places in nearly half of the fatal cases.

Table 1

Fatal Industrial Accidents breakdown by place of fall in the Construction Industry in Year 2004

	2004
Bamboo scaffolds	0
Working platforms / False works	3
Unfenced edges & Lift Shaft Openings	1
Fragile Structures	1
Ladders	1
Material Hoist ways	0
Unfenced / insecurely covered openings	1
Others	1
Totals	**8**

Table 2

Fatal Industrial Accidents in the construction Industry in Year 2004

	2004
Fatal accidents in the construction industry	17
Fall of person from height in the construction industry	8
Percentage of fall of person from height (%)	47.1

(Source: Accidents in Construction Industry of Hong Kong, Accident Analysis & Information Division, Labor Department, 2005)

Therefore, the Hong Kong government and construction company contrived some construction workplace hazard contingency plan for controlling loss of life, disruption of socio-economic activities, damage of property are of the common outcomes of these events.

Fall of person from height reason in Hong Kong Construction Industry

After these cases, Hong Kong Government has been investigating the fall of person from height reason. They totally found out the causes as follows:

1. Company failing to take adequate steps to prevent any person on the site from falling from height.
2. Company failing to provide and maintain a system of work that is, so far is reasonably responsible, safe and without risks to health.
3. Company failing to provide such information, instruction, training and supervision as may necessary to ensure, so far as is reasonably practicable, safety and health of the employees.

The above 3 reasons are all based on lack of communication.

Fall of person from height risk management in Hong Kong

The Hong Kong Government delegated some different government departments to improve the system to protect against fall of person from height in construction industry.

1. Reducing active fall of person from height plain storages
2. Constructing fall of person from height plain flow

3. Re-directing Legislations
4. Promoting construction safety to all stakeholder

Government's Concepts on Fall of Person From Height Emergency Response

The commonwealth recognizes four concepts of fall of person from height emergency management.

1. The all hazards approach
2. The comprehensive approach
3. The all agencies approach
4. The prepared community

Significance of Government

Hong Kong Government is still responsible for dealing with fall of person fall from height yet. Hong Kong Government establishes frameworks for effective and rapid cooperation between civil protection services when mutual assistance is needed. Such as Building Department, Civil Aviation Department, Civil Aid Service, Chief Executive Committee, Department of Health, Education and Manpower Bureau, Environmental Protection Department, Hong Kong Police Force, Fire Services Department, Hospital Authority, Labor Department, Home Affairs Department, Housing Department, Information Policy Committee, Information Services Department, Lands Department, Social Welfare Department, Public utility provider and voluntary agencies, etc.

Construction Industry mainly manages by the Labor Department of Hong Kong

In Hong Kong, according to the Factories and Industrial Undertakings Ordinance and subsidiary regulations (Cap.59), all construction sites where construction work is carried out, with a few exceptions, must be reported to the Labor Department of Hong Kong Government. (Lam Louis, 2006, Lecture OSH of Construction Worker Green Card Course, RSO - Hong Kong Construction Industry Employees General Union)

The Factory Inspectorate Division and the Occupational Health of the Labor Department are mainly responsible for overseeing the safety and health of those who work on these sites. The term "construction work" is legally covers a wide range of activities, including demolition of buildings, painting, decorating, renovating, etc. Workers involved in construction activities are: unskilled laborer, excavator, concretors' laborer, bricklayers' laborer, plasters' concretor, bricklayer, drainlayer, rubble mason, splitting mason, ashlar mason, steel bender, blacksmith, carpenter and jointer, plumber, filter, terrazzo and granolithic worker, glazier, painter, electrician, plant operator, truck driver, heavy load coolie, pneumatic driller, bamboo worker and scaffolder structural steel erector, diver, diver's lineman, etc. (Factories and Industrial Undertaking Ordinance, Section 4e, Cap 59)

Company's Concepts on Fall of Person From Height Emergency Response

The government recognizes 5 concepts of fall of person from height emergency management to Construction Industry.

1. Auditing company safety condition for inspections and checks to ensure standards are being implemented and that the management controls are operating correctly.
2. Establishing company safety policy to state the overall objectives and a commitment to improving performance.
3. Organizing company safety organization for management and employees to be actively involved and committed to the policy. This participation can be achieved by ensuring management control, the effective co-operation of employee and their safety representatives, the establishment of an effective safety communication system, achieving co-ordination of activities and ensuring the competence of all employees.
4. Planning and implementing company operation to conduct risks identification, risk assessment and risk control, legal and other requirement, objective and the risk management program.
5. Measuring company handle risk performance for inspections and checks to ensure standards are being implemented and that the management controls are operating correctly.

6. Reviewing company handle risk performance for monitor and result of audits of the management system. The review should be considered the standard of compliance with the policy and legislative requirements; the accident and ill-health performance and how well objectives have been met.

(Establish Occupational Safety Management Policy, Occupational Safety& Health Council, 2002, P.4)

Significance of Construction Industry

There are about 20,000 companies, which carry out construction work ranging from new construction works to repair works in Hong Kong. (Profiles of Hong Kong Major Service Industries, 2004, *http://www.tdctrade.com/main/si/spcons.htm)*

Public or government contracts are undertaken by companies, which registered with the relevant authorities. Private developers are required to submit the names of their contractors to the authorities though Authorized Persons. (Factories and Industrial Undertaking Ordinance, Section 4e, Cap 59) There are quite a number of construction companies whose shares are trades on the stock exchange. Examples are Hopewell Holdings, Hsin Chong Construction, Kumagi Gumi (HK) and Yau Lee Group, etc.

Generally, Risk Management is the process of measuring, or assessing risk and then developing strategies to manage the risk. In general, the strategies employed include transferring the risk to another party, avoiding the risk, reducing the negative effect of the risk, and accepting some or all of the consequences of a particular risk. Traditional risk management, which is discussed here, focuses on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death, and lawsuits. (http://en.wikipedia.org/wiki/Special:Search?search=risk+assessmentmanagement).

‘Emergency Risk Assessment is not merely a tool for analysis / assessment. It is a framework for the systematic application of procedures and practices to the tasks of identifying, analyzing, evaluating, treating and monitoring risk. ‘(John Salter, 2004, Civil Care & Security Studies, Kardoorair Press, Charpter 6, P.164)

In order to protect life, property and the environment, it is necessary to have:

a. an alert, informed and prepared community;
b. an understanding of hazards that the community faces;
c. a program for prevention and mitigation of emergency events;
d. identification of those responsible for controlling and coordinating emergency
e. management;
f. acceptance of support roles and responsibilities;
g. cooperation between emergency services and others, and acceptance of their roles in emergency management;
h. a coordinated approach to the use of all resources; and
i. arrangements to enable communities to recover from emergencies.

The means of dealing with risk require considering options across a spectrum of intervention opportunities. This spectrum incorporates strategies under prevention, preparedness, response and recovery, a concept promoted as ‘The Comprehensive Approach’. (John Salter, 2006, Unit Note-PDPS 276 Planning for Civil Care & Security, UNE, p.1)

Steps in the risk management process

A definitive generic description of risk management that originated in international, now being taken up in many other countries, is set out in the HS (G) 65, NFPA 1600 and EPCB. The core of the process is a series of steps.

The Alignment of Problem Solving and Risk Management Table

Management Steps	HS (G) 65 (Establish Occupational Safety Management Policy, Occupational Safety& Health Council, 2002, P.4)	NFPA 1600 (http://www.nfpa.org)	EPCB (John Salter, 2004, Civil Care & Security Studies, Kardoorair, Press, Charpter 6, P.164)
1	Auditing	Create Program to Manage	Establish Context

		Disasters and Emergencies	
2	Policy	Respect the Laws and Authorities that Govern Disasters and Emergencies	Establish Risk Assessment Criteria
3	Organizing	Perform Hazard Identification, Risk Assessment, and Impact Analysis	Profile Vulnerability
4	Planning & implementing	Establish a Hazard Mitigation Strategy	Profile Hazard
6	Measuring performance	Develop Resource Management Capability	Analysis Risks
7	Reviewing	Establish Mutual Aid Agreements	Evaluate & Prioritize Risks
8	--	Prepare Program Plans	Develop Intervention Program
9	--	Develop Incident Coordination Capability	Communication and Warning
10	--	Establish a Communications Capability	Train, Exercise and Evaluate
11	--	Establish Operational Procedures	--
12	--	Establish Logistical Capability	--
13	--	Provide Education and Training	--
14	--	Improve your Program	--
15	--	Establish Crisis Communications Capabilities	--
16	--	Develop Financial Management Procedures	--

Industrial Information

Case Study - Organization Structure

Yau Lee Construction Company Limited operates with an organization structure similar to that shown in Table 3 (Steve Rowlinson, 2004, Reference Typical Organization Structure - Construction Safety Management System, Spon Press). In such a company the head office functions and the site functions operate fairly independently. As a consequence there is a great deal of decentralization and much decision-making is made at the construction site level. Hence, in terms of safety there is an issue here. No matter how well organized the head office safety management system might be this system has to be implemented at the site level by independent group or terms.

Site management structure

Most construction sites adopt a management or organizational structure as shown in Table 4 (Steve Rowlinson, 2004, Reference Typical Site Management Structure - Construction Safety Management System, Spon Press). This table indicates that the main contractor supplies only the senior levels of management and supervision, and that virtually all levels below this are part of a multi-tier subcontracting system. Such a system allows greater flexibility in terms of employment practice but makes the control quality, safety and productivity throughout the construction site an extremely difficult task.

Sha Kok Estate Construction Site Risk Management for Building External Wall Painting Works

GENERAL COMPANY INFORMATION

Company Name : Yau Lee Construction Company Limited

Registered Address : 10/F., Tower, Enterprise Square, 9 Sheung Yuet Road, Kowloon Bay, Hong Kong.

Telephone No. : 852-2753 4388

Starting Year : 1986

Enterprise Classified: Middle

Registered No. : CC2093

Chief Executive : Mr. Wong Tin Cheung

Business : include building construction, maintenance, fitting out, plumbing and drainage contracting, building service engineering consultant, sale and manufacture of building materials, property development, etc,.

Employee : 1,500

Case Study - Introduction

This report, which is to evaluate the Construction Site Risk of Building External Wall Painting Works at Sha Kok Estate, Shatin, is based on Yau Lee Construction Company Limited. The risk rating is calculated from a composite of weighed scores obtained from enact of the major accidents of this report. The assessed factors and the relative weigh in EPCB risk management.

Preparedness

The most important preparation (EPCB five points table), and one of the cheapest are simply for an industry or region to have an emergency operation policy for managing risks.

Internal Analysis

Part 1 - Company History

Yau Lee Construction Company Limited established in 1958 as one of Hong Kong's leading construction companies. Yau Lee Construction specializes in public sector building works. Successful projects included housing estates, public schools, government offices, police depots, hospitals, market complexes and recreational amenities. Yau Lee Construction also played an important role in many key Chek Lap Kok Airport Core Program ("ACP") projects such as the Air Traffic Control Complex, the Lantau Toll Plaza Administration Building and the Air Mail Centre and Joint Movement Unit. (http://www.yaulee.com/english/compffra.htm)

Part 2 - Major Safety Mission

To provide best protection to the safety and health of the employees working on sites and the safety of publics who are affected by the company's construction activities.

Mission - Minor Safety Commitment and Objectives

Provide and maintain a working environment of high-level of safety and health standard, provide outstanding management, responsible and active attitude and maintain continuous improvement and maintain a lower incident rate.

Project: Sha Kok Estate Building External Wall Planting

Part 3 – Site Information

Address	**:**	Sha Kok Estate, Shatin
Location	**:**	New Territories Islands
Type of Estate	**:**	Public Rental Housing
No. of Block	**:**	7
Client	**:**	Hong Kong Housing Authority
Authorized Population:		18 400 Meter Square
Work Period	**:**	2005-10 to 2006-03
No. of Staff	**:**	10 scaffold with 1 Forman, 10 painters with 1 Forman
Duty hours	**:**	0900 – 1800 hrs excluding Saturday and Public Holidays

Method Statement for Sha Kok Estate Building's Outside Painting

Introduction

The following statement is describing the method approached to conduct the above job for seven blocks of project at Sha Kok Estate, Shatin.

Description of Works for Outside Painting

There are totally 7 blocks will be planted. Each block is overall dimension is 1000 m long by 1800 m wide by 40 m high from street level leading to footbridge deck.

Sequence of Works

The building external wall planting will be from the roof → ground floor

Major Equipment Lists:

Bamboo Scaffolding → Airless Spray – painting

Major Staffs List:

Scaffolding worker → Painter

Basic Scaffolding & Painting

External Analysis - Risk Assessment

Risk Identification

After establishing the management framework (EPDB risk assessment Register), the next step in the process of managing risk is to identify and descible hazards and vulnerability potential risks. Risks are about events that, when triggered, will cause problems. Hence, risk identification can start with the source of problems, or with the problem itself.

Decide who might be harmed and how, deployment of duties is follows:

Nature of Worker	Job Description	Equipment	Regulations
Bamboo Scaffold worker	Drill hole on the structural wall for install the steel supporting brackets.	Screw, screwdriver, steel, bracket, tool bag	1) Construction Sites (Safety) Regulations, 38B(1) – The contractor responsible for any construction Site shall take adequate steps to prevent any person site from falling from a height of meters or more.
Bamboo Scaffold worker	Lift up steel supporting brackets	--	
Bamboo Scaffold worker	Erection of the bamboo scaffold	Tool bag, bamboo, plastic rope	2) (Safety)38B(1) – Any contractor who has direct control over any construction work shall take adequate steps to prevent any person on any

			place
Painter	Lift up paint spraying equipment	--	where construction work is being carried out from falling from a height of 2 meters or more.
Painter	Airless spraying – painting	Airless sprayer, Paint	3) Factories and Industrial Undertaking Ordinance, Section 6A (2)(a) – The proprietor of an industrial undertaking shall provide and maintain a system of work that
Bamboo Scaffold worker	Erection of the bamboo scaffold	Cutter	.is so far is reasonably responsible, safe and without risk to health.
Bamboo Scaffold worker	Erection of the steel supporting brackets.	Screwdriver, Plastic bag	4) (Factories) Section 6a(2)(c)-The proprietor of an industrial undertaking shall provide such information, instruction, training and supervision as
Bamboo Scaffold worker	Uninstall the steel supporting brackets	Screwdriver, Plastic bag, Logistic	may be necessary to ensure, so far as is reasonably practicable, safety and health of the employees.

There are no need to list individuals by name – just think who might be harmed? Such as Government, Company itself, Staffs, Public, Stakeholders, Family, etc. They may be more vulnerable. As workforce accidents are not just causing suffering to workers and their families. They also incur arising from work stoppage, insurance claims, medical and rehabilitation expenses. We should establish a safe system of work and working environment in order to prevent the occurrence of accidents at our workplaces.

EPCB risk management gives the statistical probability of a hazardous event occurring. The outcome is based on a body of information, both qualitative and quantitative, obtained from factual experience to develop a numerical figure, which represents the degree of risk. They help us to sell our plan to managerial level for developing an intervention program.

Prevention

An effective hazard analysis must consider the effects hazards have on the community and the interaction of both with the environment. On the other hand, all members of the Site have a duty to care for their personal welfare and the welfare of their fellow colleagues. We ought to take our reasonable care to prevent personal injury or injury to others.

Response

There are totally 15 steps to plan for achieve our safety mission.

Steps	Further Action Needed / Opportunities for improvement
1	D1) Daily Morning Safety Meeting, includes a briefing on important issues (Such as 1a. the progress of the project, special activities-testing activities or visit, etc.) as well as introducing new staff and announcing the safety records of the previous day, 1b. Alerts the workers the hazards and accident-prone activities as well as their precaution and preventive measures; 2a. Morning exercises such as stretching exercise; 2b. Inspection on personal protective equipment and dressing.
2	D2) Daily Hazard Identification Activity, 1a. Forms for hazard identification Activity and supervisor focus; 1b. Clearly and briefly explain the process of the day's work; 2a. Ask group members to point out the potential hazards in their work, and come up with appropriate preventive measures against two or three major hazards; 2b. Make sure each member of the group understands the safety measures to be taken; 3a. Fill in the Hazard Identification Activity & Monitoring Form with conclusions of the meeting; 3b. Checking the working uniforms and be aware of the workers physical conditions.
3	D3) Daily Prior-to-work Inspection, 1a. Before the start of work and the usage of equipment, all the places, tools, equipments, machineries and materials must be in safe and proper condition in each morning and afternoon
4	D4) Daily Guidance & Supervision at work, 1a. Keeping track of implementation of the safety measures from the hazard identification activity; 1b. Checking the compliance and addressing problems that may occur during its implementation; 2a. Understanding the project progress and its facilitates gang leader's communication with and acceptance by the workers; 2b. Group leaders can solve problems directly; 3a. Timely check on the compliance with safety instruction and procedures; 3b. Coordinating all kinds of activities.
5	D5) Daily Safety Inspection, 1a. Demonstrates the company's commitments to safety by Senior management; 1b. Enables seniors management to understand site safety problem and solve them; 2a. Promotes cooperation among Forman to solve problems; 2b. Can be used to assess the performance of Forman.
6	D6) Daily Process Safety Discussion, 1a. Confirm the progress of the say's work and decide on the procedures of next process, including coordination of different actives, with an aim to solving problems quickly and enhancing efficiency; 1b. Assign next day's work, with safety directions and measures to Forman.
7	D7) Tidying up after Work, 1a. Tidied up after a day's work, in preparation for the next day's work; 1b. Based on the practice priorities, all required materials and tools are classified and stowed accordingly before the end of a day's work. 2a. After-work tidying up assists to maintain a safe environment when workers return to work next day.

8	D8) Daily Final Check after work, 1a. It is to ensure that no accident will occur at construction sites after work, be it fire, flooding, scaffolding collapse, theft, or trespassing, in order to prevent loss affect the public. 1b. Assessment on the workers' performances in housekeeping. 2a. Compliance with laws and regulations.
9	W1) Weekly Safety Inspections and Check Up, 1a. Forman need to inspect their own machines, electrical installation and scaffolding on site on a weekly basis to ensure the sound operation of such equipment and facilities, 1b. Promote communication between the project manager, Forman and all members and clarify each party's responsibilities; 2a. Underline the commitment of senior management.
10	W2) Weekly Process Safety Discussion, 1a. Promoting the communication between people at various levels, summarizing the safety performances in last week and planning for construction work for next week.
11	W3) Weekly Tidying Up, 1a. Thoroughly tidy up the site to prepare for work next week.
12	M1) Monthly Inspection, 1a. Regular in-depth inspections on machines and equipment serve to identify problems at the early stage. It could ensure the safety of worker to prolong the service life of the machinery. 1b. Keeping the machines and equipment in constant serviceable condition also improves the productivity and quality.
13	M2) Monthly Safety Training, 1a. Reinforce the all workers' concept and awareness of safety, sharpen necessary skills, gain relevant knowledge and foster a correct attitude, by studying the cause of accidents, the same or similar accidents can be avoided; 1b. These safety training is a legislative requirement.
14	M3) Monthly Safety Meeting, 1a. It may be held together with the daily morning safety meeting and should include, in addition to the routine issues of morning meetings, the safety promotion activities to improve the worker's sense of safety awareness and to present awards.
15	M4) Monthly Safety Committee Meeting, 1a. A strengthening communication among concerned persons on site, eliminating any misunderstandings or lack of coordination at work, reviewing the past safety records and planning for the coming month; 1b. As a result, the workers' safety awareness can be improved and accident reduction can be achieved.

(Safety Management Cycle, Occupational Safety & Health Council, 2002)

Recovery

This period is to return the community consider acceptable by the communication. The Fire Service Department, Police Force, Hospital Authority will assume overall responsibility for the accident site, subject to Labour Department’s role as Government spokesman and relief coordinator, and also subject to discharge of any duties or responsibilities vested in any Government Department or agency by law or agreement. They will follow up action including the collection of human bodies and remains, identification of fatalities and recovery and safe custody of unattended property.

Home Affair Department (HAD) District Officer will co-ordinate relief measures by Social Welfare Department, Housing Department and other bodies if necessary, at the scene with the support of her District Emergency Co-ordination.

Information Service Department and HAD officers should liaise closely on site and discuss with other relevant departments to determine the best on site press release strategy to deal with media and public enquires.

Occupational Safety & Health Council and Education Manpower Department will analysis the accident for promoting and educating how to prepare, prevent, reduce and recover these risks.

Conclusions & Summary

Communication is of fundamental importance in the regulation of risks. It allows people to participate in, or be effectively represented in, decisions about managing risks.

As well-known fact that a good risks management is included planning, organizing, designing, direction and controlling employee, and also using organization limit resource to achieve target.

An effective hazard analysis, example Table 6, must consider the effects hazards have on the community and the interaction of both with the environment. On the other hand, all members of the Site have a duty to care for their personal welfare and the welfare of their fellow colleagues. We ought to take our reasonable care to prevent personal injury or injury to others.

The above three risk management models suggest using a full hierarchy of plans, which also based on “plan-do-check-act” management model. It has an agreed emergency management structure for planning and operations should apply at each level. This structure prescribes command, control and coordination arrangements to apply during multi-service operations. We must determine whether any specialist functions need to be performed in support of the main community plan, and prepare supporting plans covering these functions.

NFPA 1600 of risks management is a full risk management plan. EPCB and HS(G)65 is a basic risk management plan. They are useful methods for handling our community’s risks. Comparing three models for construction risks management in The Alignment of Problem Solving and Risk Management Table. EPCB model is useful than NFPA 1600 & HS(G) 65 model. It is because there were a lot of cases causing

person injury and death per years. We just look for the reason of risks and how to manage them, NFPA1600 & HS(G) 65 would not be appropriated for us.

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